AMCO Air Monitoring Results
CAG Meeting
February 13, 2012

ITSI Innovative Technical Solutions, Inc. A Gilbane Company
in association with CDM

AMCO Chemical Superfund Site
Community Advisory Group
Oakland, California

Objectives of Air Monitoring

- Quantify volatile organic compound (VOC) levels in air during drilling and sampling for the soil characterization.
  - Total VOCs Concentrations
  - Specific VOC Concentrations
- Evaluate potential air quality exposures to:
  - Field Workers
  - Adjacent Residents/Community
  - EPA Field Trailer Occupants

Measurement of VOC Concentrations

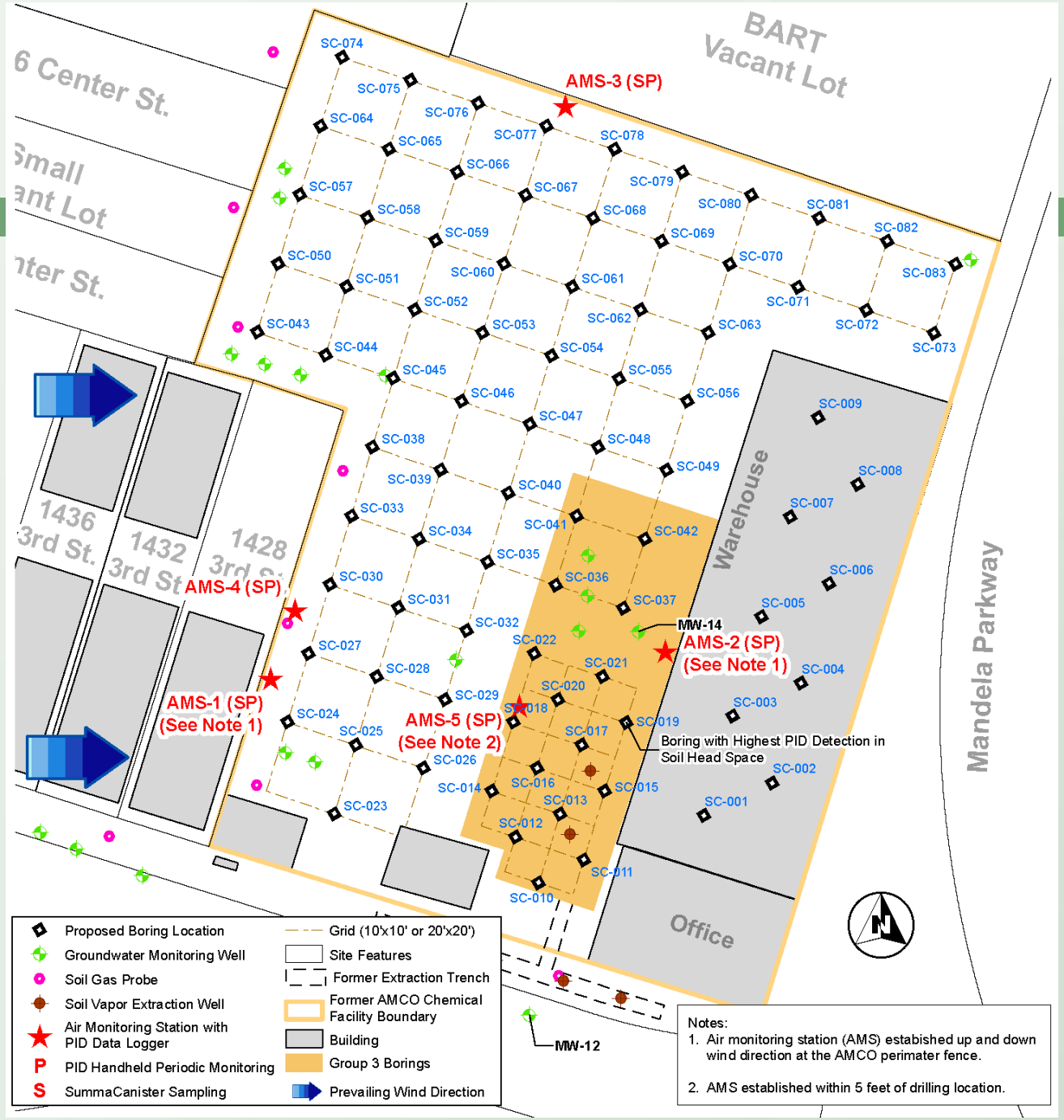
- **Primary Method** - Photo-ionization detectors (PIDs) with10.6 eV lamps – detect total VOC concentrations in parts per million by volume (ppmv)
  - Hand-held with manual data readings
  - Connected to data loggers (reading every minute)
- Drager Chip Measurement System (CMS) Vinyl Chloride (VC) detector – hand-held and chemical-specific, measures VC concentrations in ppmv
- **Secondary Method** - Summa Canisters collecting air samples over 8- hour work period with analysis by EPA Method TO-15 provides VOC-specific Concentrations in micrograms per cubic meter ($\mu g/m^3$)

Summary of Air Monitoring Plan

- Air Monitoring Locations
  - Drilling Location
  - Perimeter of Site - Fence adjacent to 1428 3rd St., Upwind & Downwind, and Fence adjacent to EPA Trailer
- Air Monitoring at Drilling Location
  - Soil Headspace - Total VOCs (PID) and VC (CMS)
  - Near Borehole Air Monitoring – Total VOCs (PID), VC (CMS), and Summa Canisters
  - Worker Breathing Zone - Total VOCs (PID) and VC (CMS)
- Air Monitoring at Site Perimeter – Total VOCs (PID) and Summa Canisters
  - No VC Monitoring, PID < 0.5 ppm

Air Monitoring Locations During Soil Drilling in the AMCO Source Area (Group 3 Borings)

January 24 to February 2, 2012



Soil Headspace Monitoring

- Soil Sample Placed inside a Ziploc Bag and Sealed
- Soil and Headspace inside Bag equilibrate for ~20 minutes
- Total VOC and VC concentrations in Headspace Measured
- Soil/Headspace monitoring for entire boring depth

Soil Headspace Monitoring Results

- Maximum PID Result = 1,245 ppm from SC-019 soil at 3 feet below ground surface
- Maximum VC Result = 2.76 ppm for soil from SC-019 at 7-10 feet bgs

Near Borehole Air Monitoring Results

- Maximum PID Result = 66 ppm from PID datalogger near SC-019 (source area) on 1/30/2012 at 9:24 AM
- VC was measured at 1.62 ppm in shallow soils at SC-019
- Note: Awaiting analytical results for Summa canister

Air Quality Action Levels for Workers at AMCO
(action levels are site-specific)

VOC Monitoring Method	Action Level	Resulting Action
PID	≥ 5 ppm consistently for 5 minutes	Level C PPE (Air Purifying Respirator)
	> 10 ppm consistently for 5 minutes	Stop Work, upgrade per CIH established response - likely Level B PPE (Supplied Air Respirator)
VC Detector	≥ 0.5 ppm	Level C PPE (Air Purifying Respirator)
	> 10 ppm	Stop Work, upgrade per CIH established response - likely Level B PPE (Supplied Air Respirator)

Air Purifying Respirator (Level C)

Supplied Air Respirator (Level B)

Worker Breathing Zone Air Monitoring Results

- PID had spikes for less than a minute up to 70 ppm and VC at 1.60 ppm during the drilling of shallow soils from Group 3 borings.
- Workers were at Level C protection for Group 3 borings and sampling.
- At the soil sampling area (inside warehouse), total VOCs and VC were detected in the sampler's breathing zone, but below action levels.

Site Perimeter Air Monitoring Results during Boring SC-019 Drilling and Sampling

Monitoring Location	Max. Mobile PID (ppm) [Datalogger] 1/30/12	Maximum VC (ppm) 1/30/12
Up Wind	0.0 [0.0]	0.0
Down Wind	0.0 [1.1@12:57]	0.0
EPA Trailer	0.0 [0.2]	0.0
1428 3rd St. Residence	0.0 [0.0]	0.0